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Reference Prelude HI 08

Ethnobotanical Leaflets 13: 480-96. 2009.

Fig 1, 2, 3, 4 not included

Ethnobotanical Uses of Plants Among the Binis in the Treatment of Ophthalmic and ENT (Ear, Nose and Throat) Ailments

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Issued 01 April 2008

Abstract

An ethnobotanical survey of plants used in the treatment of Ophthalmic and ENT (Ear, Nose & Throat) ailments in Benin City, Edo State, Nigeria was conducted. The information was obtained through administered questionnaire and personal interviews of local healers in the study area. The investigation revealed that 24 plant species belonging to 18 families and 22 genera are commonly in use in the treatment of eye and ENT; of these, 16 plant species are used for the treatment of eye ailment, 5 for ear, 3 for nose while 5 are used for throat ailment. The documented medicinal plants were mostly used to cure ear ache, sore throat, nasal bleeding and eye ailment. The ethnobotanical survey shows that among the plants studied some plant species like *Allium cepa*, *Newbouldia laevis*, *Euphorbia hirta* and *Spondias mombin* are used for the treatment of more than one ailment.

Key words: Ethnobotanical, Plants, Binis, Ophthalmic, Ear, Nose and Throat, ailment.

Introduction

Traditional medicine has remained the most affordable and easily accessible source of treatment in the primary health care system of resource poor communities and local therapy is the only means of medical treatment for such communities (Yinger and Yewhalaw, 2007).

It has been reported that about one-fifth of Americans use “natural” supplement such as herbs for maintaining health (Stein, 2004). In developed countries such as United States, majority of people (55%) combine alternative treatments with conventional medicine. It is important to note that 13% try alternative treatments because they think conventional medicine is too expensive (Stein, 2004). Plants have been used in traditional medicine for several thousand years (Abu-Rabia, 2005). Today according to the world health organization (WHO), as many as 80% of the world’s people depend on traditional medicine for their primary health care needs (Azaizeh et al., 2003).

Ethnobotany is a preliminary method of research, suitable for gathering information on the use of plants. It has been proven, time and time again, that the 'quack' medical knowledge handed down by the common people constitutes sources of information useful for scientific research and that many plants utilized exclusively in popular tradition, when exposed under scientific examination, have been found to be useful for different sectors in the industry, therefore science and tradition have a strong connection between them, science in fact has often traditional origin (Lentini, 2000).

During the last few decades there has been an increasing interest in the study of medicinal plants and their traditional use in different parts of the world but documenting the indigenous knowledge through ethnobotanical studies is important for the conservation and utilization of biological resources (Lev, 2006). There are considerable economic benefits in the development of indigenous medicines and in the use of medicinal plants for the treatment of various diseases (Azaizeh et al., 2003). Due to less communication means, poverty, ignorance and unavailability of modern health facilities, most people especially those in rural areas are still forced to practice traditional medicine for their common day to day ailment. Most of these people formed the poorest link in the trade of medicinal plant (Khan et al., 2005). A vast knowledge of how to use the plants against different illnesses may be expected to have accumulated in areas where the use of plants is still of great importance (Diallo et al., 1999).

In the developed countries, 25% of the medical drugs are based on plants and their derivatives (Principe, 1991). A group of world Health Organization (WHO) experts, who met in Congo Brazzaville in 1976, sought to define traditional African medicine as the sum total of practices, measures, ingredients and procedures of all kinds whether material or not, which from time immemorial has enabled the African to guard against diseases, to alleviate his/her suffering and to cure him/herself (Busia, 2005). Traditional medical knowledge of medicinal plants and their use by indigenous culture are not only useful for conservation of cultural traditions and biodiversity but also for community health care and drug development in the present and future (Pei, 2001).

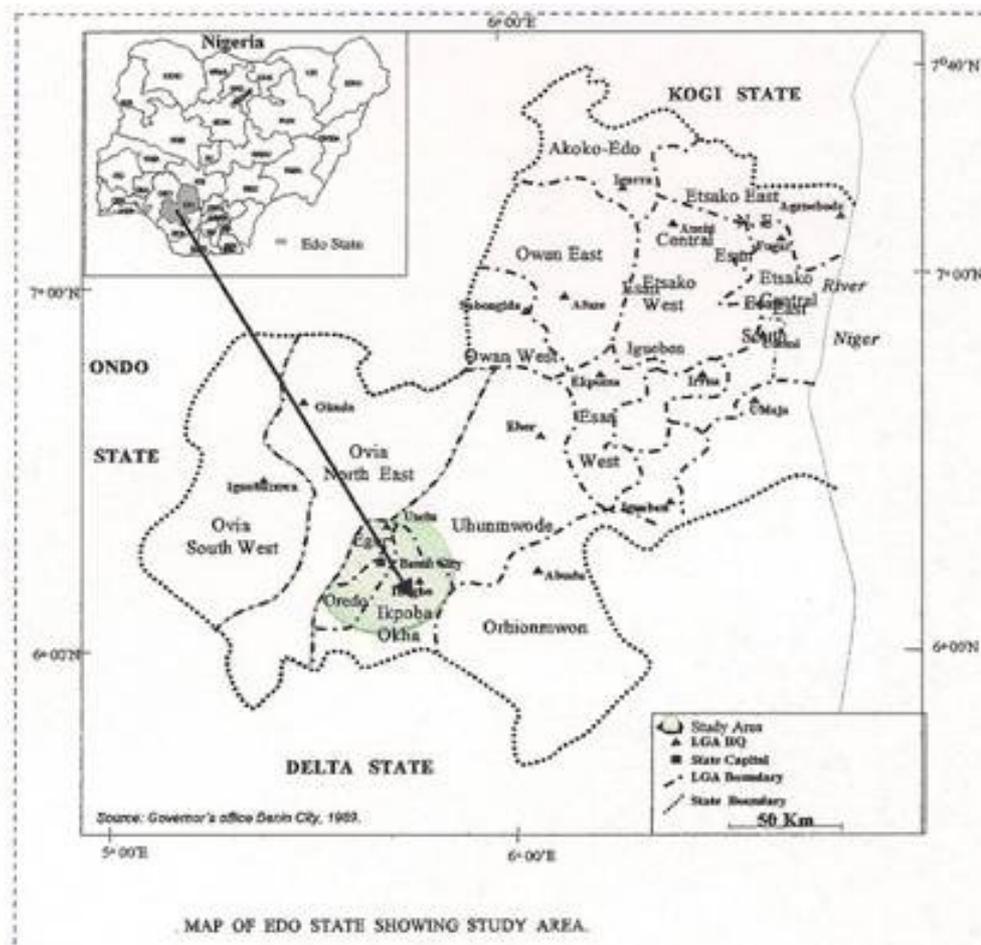
Ethnomedical scholars in time past and even now have made contributions to the development of the traditional medical system in Nigeria. This they have done through ethnobotanical survey, preliminary investigations of phytochemistry, microscopy and pharmacological trials on medicinal plants. Some of these ethnomedical elites are Gill (1992), Ibeh et al., (2002), Idu and Omoruyi (2003), Adodo (2004), Igoli et al.,(2005), Idu et al.,(2006), Idu and Onyibe (2007) and Idu et al., (2007).

The aim and objective of this study is to document the Indigenous knowledge of the Bini people as regards the use of medicinal plants for the treatment of ophthalmic and ENT (ear, nose and throat) diseases.

Materials and Methods

The Study Area

The study area covered Benin City in Edo State. Area of approximately 550 sq. km, situated between 6° 15' N and 5° 25' E of the equator (Fig. 1).



Ethnobotanical Information

Ethnobotanical data were collected through general conversation with informants in the field, between the months of November, 2007 to February, 2008. During the course of the study fifty informants were interviewed. Information was obtained through oral interview guided by structural questionnaire (Appendix 1). Informants were selected based on their knowledge of medicinal plants either for self-medication or for treating others. Such informants were accompanied by the researcher to nearby field for identification and collection

Plant parts were collected using standard herbarium format

During the interview vernacular names, useful plant parts, method of preparation of remedy, dosage, side effect and contraindications were recorded

Species Identification

The plant species were identified with the aid of some published literatures: A Handbook on West African Weeds (Akobundu and Agyakwa, 1998); Medicinal Plants of West Africa (Ayensu, 1978); Trees of Nigeria (Keay, 1989); Taxonomy of West African Flowering Plants (Olorode, 1984) and Ethnomedicinal Uses of Plants in Nigeria (Gill, 1992). The voucher specimens of each species have been deposited at the Herbarium section of the Department of Plant Biology and Biotechnology, University of Benin.

Results and Discussion

The ethnobotanical survey revealed that a total of twenty-four (24) plant species distributed in eighteen (18) families and twenty-two (22) genera (Table 1, Figs. 1, 2, 3, and 4 and 5). The following enumerated plants were identified with respect to their families and genera. For each species, the botanical name, common name, vernacular name, folk use, preparation of remedy dosage, literature. For all the plant species, specific parts were used with different means of preparation of remedy and different dosages were employed.

Enumeration

1. FAMILY: ASTERACEAE

BOTANICAL NAME: *Ageratum conyzoides* L.

COMMON NAME: Billy goat weed

VERNACULAR NAME: Ebighedore

Plant Part Used: Leaves

Folk Use: Leaves are used to treat redness of the eye and inflammation.

Preparation of Remedy: Leaves are squeezed and the emanating juice is dropped into the eyes as eye drop.

Dosage: One drop, twice daily.

LITERATURE

The leaves for dressing wounds, inflammation and redness of eye (Idu et al., 2003). Leaf powder is used orally to cure leucorrhoea (Katewa and Asha, 1997). A decoction of the stem bark, leaves and aerial branches of *Ageratum conyzoides* is used against diarrhea (Igoli et al., 2005). A maceration of the whole plant and whole plant of *Sorghum guinensis* is used for treatment of diabetes (Igoli et al., 2005). Fresh leaves are chewed as an emetic, the leaves with the leaves of *Ocimum* and bush pepper are used as a cure for abdominal disorders (Ayensu, 1978).

Whole plant contain flavonoids; Cornyzarigum, 5-methoxynobile, Cardinalpinene, Limonene, cardinene, oxygenated quiterpenoids, saponin, tannins (Gill, 1992). Whole plant: in clinical trials with patient is with arthrosis, administered aqueous extracts of the whole plant, reported analgesic effect in 66% of patients and improvement in articulation mobility in 24% without side effects. Using aqueous extract of the whole plant also verified effect clinical control of arthrosis, reporting a decrease in pain and inflammation or improvement in articulation mobility after a week of treatment (Idu et al., 2007).

2. FAMILY NAME: AMARYLLIDACEAE

BOTANICAL NAME: Crinum jagus (Thomson) Dandy.

COMMON NAME: Poison Bulb

VERNACULAR NAME: Ogede-odo

Plant part use: Leaves.

Folk use: Leaves are used for earache.

Preparation of remedy: Leaves are heated and then squeezed so that the juice comes out and common salt is added.

Dosage: The mixture of the juice and common salt is dropped into the ear twice daily.

LITERATURE

The warm leaf juice with a pinch of common salt is used for ear complaints as an emetic (Gill, 1992). The decoction of the bulb is used as vermifuge and purgative (Gill, 1992). The bulbs of *Crinum jagus* and *Crinum glauum* are used in traditional medicine in Southern Nigeria for a memory loss and other mental symptoms associated with ageing (Houghton et al., 2004). Analysis of the bulbs of *Crinum jagus* gave in addition to lyconine and hamane, tetrahydro-1, 4-oxazine (morpholine) as its hydrochloride, calcium oxalate and calcium tetrata (Edema and Okieimen, 2002). Alkaloidal extract of bulbs from each species showed inhibition of acetylcholinesterase, an activity exploited therapeutically to raise the depressed levels of acetylcholine in the brain associated with alzheimer's disease. Using the in situ bioautographic test method for enzyme inhibition, a number of alkaloids were isolated and their activity quantified using the Allman spectrophotometric test (Houghton et al., 2004).

3. FAMILY NAME: ANACARDIACEAE

BOTANICAL NAME: *Spondias mombin* L.

COMMON NAME: Hog plum

VERNACULAR NAME: Okhigha

Plant part used: Leaves

Folk use: Infusion of fresh leaves is used for the treatment of short sightedness and Infusion of fresh leaves plus lime juice is used for the treatment of cataract.

Preparation of remedy: The fresh leaves are squeezed in water and filtered and also fresh leaves are squeezed in water plus lime juice.

Dosage: One cup thrice daily.

LITERATURE

The juice from fresh leaves with lime juice is used against cataract (Adodo, 2004). The leaves are used against convulsion and stomach ache (Idu et al., 2003). Infusion of leaves is used for the treatment of cold and cough (Irvine, 1961). Stem bark: The decoction or macerated stem bark is used against severe cough, with immature palm nuts used for the treatment of fibroid (Adodo, 2004). Fruits: The juice from the fruit is used as a febrifuge and for diuretic purpose (Irvine 1961).

Saponins, resins, tannins and alkaloids are contained in the leaves; fruit juice and stem bark (Gill, 1992). Stem bark: Contains Alkaloid and tannins (Burkill, 1985), fibre and calcium (Idu et al., 2002). The stem bark is fungicidal (Burkill, 1985) and showed anti-tumour property when it was administered on Wister Rat (Idu et al., 2002).

4. FAMILY NAME: APOCYNACEAE

BOTANICAL NAME: *Rauwolfia vomitoria* Afzel.

COMMON NAME: Swizzle stick

VERNACULAR NAME: Akata

Plant part used: Leaves

Folk use: Leaves are used for irritation of the eyes.

Preparation of remedy: Juice is squeezed out of fresh leaves.

Dosage: One drop into the eyes daily.

LITERATURE

Urhobo people use the decoction of leaves to induce sleep (Gill, 1992). Infusion of the powdered root in cold water is used to treat nervous disorder, hypertension, insomnia and mental illness (Gill, 1992). Leaf-pulp is taken in drought and used in message for chest pain and leaf-sap is deemed able to arrest loss of hair and even to restore it (Bouquet, 1972), alkaloids (Burkill, 1985).

5. FAMILY NAME: ASTERACEAE

BOTANICAL NAME: *Spilanthes filicaulis* (Schum and Thom) J.C.D. Adams.

COMMON NAME: Brazil cress

VERNACULAR NAME: Ehie edo oto

Plant part used: Flower.

Folk use: Used for sore throat.

Preparation or Remedy: The flower is mixed with 3 seeds of alligator pepper or dry gin and chewed then swallowed.

Dosage: It is chewed and swallowed twice daily

LITERATURE

The leaves along with alum are recommended as emetic (Gill, 1992). Aqueous extracts of six plant species used in Cameroonian ethno medicine for the relief of stomach complaints were tested for anti ulcer activity. An HCL/ETOH solution was used to induce gastric lesions in male wister rats (40 – 170g). The extracts of *Voacanga africana*, *Eremomastax speciosa*, *Emila practer missa*, *Spilanthes filcaulis* and *Centella asiatica* produced complete mucosal cytoproctio ata dose of 1000, 190, 500, 2000 and 500mg/kg respectively (Tan et al., 1999).

6. FAMILY NAME: BIGNONIACEAE

BOTANICAL NAME: *Newbouldia laevis* (P. Beauv.) Seeman ex . Bureau.

COMMON NAME: Tree of life

VERNACULAR NAME: Ikhimwin

Plant part use: Leaves.

Folk use: Decoction of the leaves is used to treat sore eye, young fresh leaves are used to cure eye inflammation and redness and the leaves are used for the treatment of ear pain.

Preparation of Remedy: The leaves are squeezed and the juice from it is dropped into the eye and the young fresh leaves are crushed in little amount of water and the extract is dropped into the eye to cure eye inflammation and redness and the leaves are heated and became weak and squeezed. The juice from it is dropped into the ear against ear pain.

Dosage: One drop, twice daily.

LITERATURE

A decoction of the roots with the roots of *Alstonia boonei*, *Jatropha curcas* are used for the treatment of epilepsy (Adodo, 2004). The stem bark with clay and red pepper is used against pneumonia, fever, cold and cough (Idu et al., 2003) Decoction of leaves is used against dental caries (Okeke, 2003). A decoction of leaves is used for sore eyes (Irvine 1961; Uphof, 1968). The fresh bark is used against migraine (Persistent headache) (Adodo, 2004). Leaves and stem bark: In the leaves and the stem bark no flavonoids, saponins, quinines, terpenes, or steroids could be detected (Bouquet, 1972).

7. FAMILY NAME: CAPPARIDACEAE

BOTANICAL NAME: *Euadenia trifoliolata* (Schum and Thonn) Oliv.

COMMON NAME: Euadenia

VERNACULAR NAME: Oboh yeho

Plant part used: Leaves.

Folk use: Leaves are used to treat ear ache.

Preparation of remedy: Heat the leaves and squeeze out the juice dropping it into the ear.

Dosage: One drop, twice daily.

LITERATURE

Roots, stem-bark, fruits are used for treating tuberculosis, arthritis, otalgia, aphrodisiac, rectal prolapse (Odugbemi and Akinsulire, 2006).

8. FAMILY NAME: CARICACEAE

BOTANICAL NAME: *Carica papaya* L.

COMMON NAME: Pawpaw

VERNACULAR NAME: Uho

Plant part used: Seeds.

Folk use: The decoction of the seed is used for dissolving small fat deposits in the eyes and eyelids.

Preparation of remedy: The seeds of this plant is boiled in water and extracted.

Dosage: One drop into the eyes twice daily.

LITERATURE

Uses reported: The decoction of the root is used as a remedy for bronchitis. The root is also effective against piles (Adodo, 2004). **Leaves:** The infusion of the yellow leaves is used for malarial fever, the infusion of the green leaves for diabetes and induced hypertension (Adodo, 2004). The decoction of the dried leaves added to other leaves is used for treating malaria (Idu et al., 2005). Infusion of the leaves is used to treat stomach ache (Ross, 1999). **Seeds:** Decoction of seeds is effective in dissolving small fat deposits in the eyes and eyelids and in dissolving small fat in cases of overweight (Gomez, 2004). **Fruits:** An infusion of the whole unripe fruit into pieces is a very good remedy for intestinal ulcer. A decoction of the fruit is used against impotence (Adodo, 2004). The fresh fruit is eaten as a treatment for beri-beri (Bhat et al., 1990). Fruit is also eaten for nausea, as a carminative, for jaws, as an antipyretic, purgative and for dysentery (Adesina, 1982).

Leaves: The leaves contain the alkaloid – carpaine, saponin, tannins, nicotinic acid and tocopherol (Gill, 1992). **Fruit:** The fruit contains beta-ocimene, 4-terpineol, malic acid and methanol (Ross, 1999). **Seeds:** The seed contains glucoside carian (Gill, 1992). The seed has myrosin, caricin and cyclobranol (Ross, 1999). **Fruit and seeds:** They contain alkaloids, salts, potassium, malic acid, pepsin, pancreatin, papain, and vitamins A, B, and C. (Gomez, 2004). **Leaves:** The acetone extract of the dried leaves have antibacterial activity (Ross, 1999). **Fruit:** Extract of the ripe dried fruit has abortifacient effect with 100% effectiveness,). **Seeds:** The dried seeds have no anti-spermatogenic effect (Das, 1980). Ethanol (95%) extract of the seed had hypotensive activity when administrated intravenously to dogs and respiration was observed to be depressed (Bose et al., 1961).

9. FAMILY NAME: EUPHORBIACEAE

BOTANICAL NAME: Euphorbia hirta L.

COMMON NAME: Australian Asthma plant/garden spurge, snake weed

VERNACULAR NAME: Asin Uloko

Plant part used: Stem

Folk use: Latex in the freshly cut stem is used for treating conjunctivitis and is used for treating ear pain.

Preparation of Remedy: The stem is broken to extract the latex and dropped into the ear.

Dosage: One drop, twice daily.

LITERATURE

The plant decoction is useful in removing worms in the bowel. It is also used for asthma and cough (Khan et al., 2005). Leaves; the infusion is prescribed to nursing mothers for increased lactation. The poultice of the leaves or the whole herb is a remedy for boils and wound (Gill, 1992). Stem exudates is used as ear drop for pain (Igoli et al., 2005). Whole plant: Contain Euphorbol hexacozonate cycloar-tenol, ingenotiriacetate, tinyatoxin, tannins (Adodo, 2004).

The antispasmodic principle appears not to be toxic orally. The aqueous extract of the principle was however toxic to the mouse but the alcoholic extract was on toxic. 0.1 ml of the alcoholic extract increased the rat limb flow. The alcoholic extract (0.1 ml) relaxed the guinea pig ileum. Both extract had no effect on rabbit duodenum and neuromuscular function but depressed the blood. No ganglionic blocking activity no 5-hydroxyiryptamine-like activities were observed (Hezleton and Hellerman, 1951).

10. FAMILY NAME: FABACEAE

BOTANICAL NAME: Albizia lebbek L.

COMMON NAME: Lebbek tree

LOCAL NAME: Eshegeshege

Plant part use: Leaves.

Folk use: Leaves are used to treat night-blindness.

Preparation of remedy: The leaves are squeezed and the juice is applied to the eye as eye drop.

Dosage: One drop, twice daily

LITERATURE

The bark and seeds are astringent and they are used for the treatment of piles, diarrhea, dysentery and gonorrhoea (Gill, 1992). Seeds, leaves, stem bark are used for astringent, mouth wash, river-blindness, gonorrhoea (Odugbemi and Akinsulire, 2006).

11. FAMILY NAME: FABACEAE

BOTANICAL NAME: *Baphia nitida* Lodd.

COMMON NAME: Cam wood

VERNACULAR NAME: otua

Plant part used: Leaves.

Folk use: Leaves are used to treat eye sore.

Preparation of remedy: Leaves are squeezed and the juice is applied to the eye.

Dosage: One drop, twice daily.

LITERATURE

Leaves, bark, roots and twigs treats constipation, skin diseases, venereal diseases, ringworm, enema, flatulence, small pox (Odugbemi and Akinsulire, 2006). Leaves: tannin, flavonoids and saponin glycosides, rich in flavoid (Onwukaeme, 1995). The constituents from the leaves of *Baphia nitida* were extracted using methanol and acetone as solvents. The extract did not demonstrate any acute toxic effects in mice within the dose-range used during this study. The extract inhibited gastric emptying time in rats and intestinal motility in mice, both effects were manifested in a dose related fashion. These effects were similar but less pronounced than those produced than those produced by atropine sulphate. The extract did not induce gastric ulceration in rats and failed to protect against acetyl salicylic acid induced gastric ulcer in rats or histamine-induced gastric ulcer in rats or histamine induced duodenal ulcer in guinea pig (Onwukaeme and Lot, 2006).

12. FAMILY NAME: LAMIACEAE

BOTANICAL NAME: *Ocimum basilicum* L.

COMMON NAME: Sweet basil and Harry Bail

VERNACULAR NAME: Ebi hihi

Plant part used: Leaves

Folk use: Fresh leaves are used for earache and for dullness of hearing.

Preparation of remedy: The leaves are squeezed and the juice is dropped into the ear.

Dosage: One drop, twice daily.

LITERATURE

Leaves are used for respiratory disorders (Okujagu et al., 2005). Leaves are also used against fever (Idu et al., 2003). The whole plant is used as a remedy for gonorrhoea, catarrh conditions, cough, constipation, dysentery, ringworm, carminative, and hypertension as blood tonic (Odugbemi and Akinsulire, 2006). Leaves have been found to contain methylchavicol, linalol, eugenol, thymol and xanthamicrol (Okujagu et al., 2005). The whole plant contains essential oil, methylcinnamate, and terpenes (Gill, 1992). Leaf juice is reported to be slightly narcotic. The two carcinogens safrole and estragole (methyl chavicol) have been reported in some oil (FAO, 1999).

13. FAMILY NAME: LAMIACEAE

BOTANICAL NAME: *Ocimum gratissimum* L.

COMMON NAME: Tea bush

VERNACULAR NAME: Ebe amwonkho

Plant part used: Leaves.

Folk use: Fresh leaves are used to stop nasal bleeding.

Preparation of remedy: The leaves are squeezed and the juice from it is dropped into the nostrils.

Dosage: One drop, twice daily.

LITERATURE

Leaves boiled, macerated or squeezed in water are taken orally against typhoid fever (Igoli et al., 2005) leaf juice is taken orally for coughs (Purkayastha et al., 2005). The leaves are used against diabetes (Idu et al., 2003) also used as a remedy for chest pain, diarrhea, catarrh, to prevent miscarriage, stop nasal bleeding, relieve cold, headache and bronchitis (Idu et al., 2007) convulsion hypertension coli as anti microbials, anthelmintics and anti bacterials (Odugbemi and Akinsulire, 2006). Whole plant has been shown to yield essential oil which is rich in eugonol and thymol (Sofowora, 1993). Leaves contain alkaloids, cellulose and saponin (Gill et al., 1992). Whole plant: The volatile oil from the plant has been shown to possess some antibacterial properties and the vapour of the oil was reported to kill protozoa (Sofowora, 1993).

14. FAMILY NAME: LILIACEAE

BOTANICAL NAME: *Allium cepa* L.

COMMON NAME: Onion

VERNACULAR NAME: Alubarha

Plant part used: Bulb

Folk use: Bulb is used for treating irritation of the eye, Roasted bulb in the form of poultice is used for treatment of earache and it is used for brightening eye colour. It is always recommended for people that have dull or reddish eye colour.

Preparation of Remedy: The bulb is broken and brought close to the eye to stop irritation, Onion bulb is roasted, molded with the hand then brought close to the ear i.e., pasted close to the ear and onion bulb is eaten raw and always used for preparing meals.

Dosage: The broken bulb is brought close to the eyes twice daily, and drop twice daily and onion bulb is eaten daily.

LITERATURE

The bulb eaten raw is used as a remedy for insomnia, loss of memory and diabetes (Adodo, 2004). It is also effective for treating hay fever and catarrh and also to cure chest infection and tuberculosis (Dawodu, 1993) Bulbs are used for treatment of hemorrhoids, dysentery and asthma (Ahmed et al., 2005). Bulbs: A compression made of roasted bulb is applied to inflamed or protruding piles for relief (Gill, 1992).

Bulbs and leaves: Bulbs and leaves contain riboflavin, sulphur compound-in-prophyl disulphur (Gill, 1992). It is rich in iodine, sulphur, phosphorus, potassium, calcium (Dawodu, 1993). Bulbs contain arginine histidine and isoleucine (Ahmed et al., 2005).

Aqueous extract of onion bulb was found to be effective in inducing diuresis in albino rats. Its diuretic effect was similar to that of frusemide, indicating it to be a potent diuretic. The diuretic

activity of the extract was associated with increase loss of Na⁺ and K⁺ ions indicating that the diuretic agent might be acting on renal tubular cells by interfering with ion transport. This observation thus confirms the traditional claim of this transport (Aguyi and Obi, 1998).

15. FAMILY NAME: MALVACEAE

BOTANICAL NAME: *Sida acuta* Burm. F.

COMMON NAME: Broom weed

VERNACULAR NAME: Aihenmmwin

Plant part used: Leaves

Folk use: Leaves are used to treat bleeding nose and for treating eye pain.

Preparation of Remedy: Leaves are squeezed and placed at the nostril and the stem is cut into small pieces and soaked into water for some hours and later used as eye drop.

Dosage: The squeezed leaves with the juice are put at the nostril to stop nasal bleeding and it is dropped in the eye twice daily.

LITERATURE

The decoction of the leaves is given for diarrhea during pregnancy. The crushed leaves are applied over wounds, fresh cuts and bruises. Leaves are also used as emollient (Gill, 1992). Decoction of leaves is used in the treatment of hysteria (Dolui et al., 2004). Root bark: Powdered root bark mixed with sugar and milk is taken orally in the treatment of gonorrhoea (Dolui et al., 2004). The root and leaves with black pepper are ground and applied locally in snake bite (Dolui et al., 2004). Isolated Substances: The leaves contain saponin and mucilage (Gill, 1992). Entire Plant: It contains the alkaloid – cryptolepine (Gunatilata et al., 1980). Leaves stem and root contains saponin, tannin and alkaloids (Okujagu et al., 2005). The root and stem have been reported to have anti-microbial activity (Warrier et al., 1997).

16. FAMILY NAME: MALVACEAE

BOTANICAL NAME: *Gossypium hirsutum* L.

COMMON NAME: Cotton

VERNACULAR NAME: Ebe Oru

Plant part used: Flower (cotton)

Folk use: Cotton wool from cotton seed is used for treating nasal bleeding.

Preparation of remedy: No preparation.

Dosage: Cotton wool is placed at the nostril.

LITERATURE

The juice of the leaf is used as eye drop to relieve convulsions (Gill, 1992). The decoction of the leaf and flower is given in dysentery (Gill, 1992). Leaves, roots, seeds are used for convulsion, dysentery, asthma, antipyretic, hypertension, ulcers, contraceptive, relieve abortifient, ease labour (Odugbemi and Akinsulire, 2006). Contains flavonolglycosides gossipin, gossypitrin, sitosterol (Gill, 1992). Gossypol found in the plant has been found to have toxic effect on parasitic protozoa and viruses, which justify its use in traditional medicine against scalp infection, dysentery, gonorrhoea and as antiseptic (Sotelo et al., 2005).

17. FAMILY NAME: MORACEAE

BOTANICAL NAME: *Musanga cecropioides* R. Br.

COMMON NAME: Umbrella tree

VERNACULAR NAME: Oghohen

Plant part used: Root.

Folk use: The root is used to cure conjunctivitis (eye disease).

Preparation of remedy: The prop root is cut and the liquid from it is dropped into the eyes.

Dosage: Liquid from the prop root is dropped into the eyes thrice daily.

LITERATURE

The decoction or infusion of the root is given an anthelmintic especially for tape worms and dysentery (Gill, 1992). Root exudates, leaves, bark is used for treating tapeworm's dysentery, fever, anthelmintic cough (Odugbemi and Akinsulire, 2006). Stem bark contain saponins, tannins, flavo with no traces of alkaloids, anthraquinones and cyanogenetic glycosides (Ayinde, 2003). Presence of kalaic acid in the stem bark and some other triterpenoid in the leaves, stem bark and the root (Lontsi et al., 1989). The pharmacological effects of *Musanga cecropioides* on rat thoracic aorta were examined in high K⁺ medium (55mM), Ca²⁺ 3mM) induced vasoconstriction was inhibited by *Musanga cecropioides* in a concentration – dependent manner. The tonic contractions elicited by KCL 55mM were relaxed by *Musanga* and were more marked in 0.45mM Ca²⁺ than 1.8mM medium. Sodium – induced responses were antagonized non competitively by *Musanga* Sodium sustained contraction was relaxed. The relaxing effect of *Musanga* was not antagonized by indomethacin or methylene blue. It is concluded that *Musanga* relaxation of the rat aorta does not involve cyclo-oxygenase, nor cAMP pathway, but unique unlike those of known classical vasodilators (Aziba, 2005).

18. FAMILY NAME: PALMAE

BOTANICAL NAME: *Cocos nucifera* L.

COMMON NAME: Coconut

VERNACULAR NAME: Ivi-Oibo

Plant Part Used: Root

Folk Use: The root is used as gargle for sore throat

Preparation of Remedy: Liquid preparation is obtained by boiling the root in water.

Dosage: One cup of decoction root is gargled in the throat twice daily.

LITERATURE

The decoction of the root is used for uterine diseases, gleet, bronchitis, liver ailments and dysentery. It is also used as gargle for sore throat (Gill, 1992). The decoction of the root with *Xylopi aethiopica* is used against fibroid (Adodo, 2004). A decoction of the root is effective for aptha, mouth ulcers or ulcerative mouth lesions (Gomez, 2004). Kernel the ash of the kernel is used in treating burns (Soma and Batra, 1997). Pericarp: The ash of the pericarp is applied to treat skin disease (Jadeja et al., 2006). Fruits: the coconut water contained in the fruit has moderating effect on cancer cells (Adodo, 2004). The coconut water is an antidote. It is also used in arresting excessive and continuous purging (Etukudo, 2003). The coconut flesh (Solid endosperm), Contain 13.0% carbohydrates, 36.6.% water, 4.5% protein, 41.6% fat, 3.6 in fibre and 1.0% minerals (Etukudo, 2003).

19. FAMILY NAME: PALMAE

BOTANICAL NAME: Phoenix dactylifera L.

COMMON NAME: Date Palm

VERNACULAR NAME: Ukuon

Plant part use: Fruit.

Folk use: The fruits are used for relief of sore-throat.

Preparation of remedy: No preparation.

Dosage: The fruit is eaten twice daily.

LITERATURE

The sap is demulcent, diuretic and refrigerant in genito urinary disorder. (Gill, 1992). The fruit are also used for relief of sore-throat, cough, asthma, fevers, gonorrhoea and liver complaints (Gill, 1992). The fruit contained fat, lipid and protein (Vayalil, 2002). A crude acetone extract of the pit of date palm was prepared and its antiviral activity evaluated against lytic pseudomonas phage ATCC 14209-BI, using Pseudomonas aeruginosa ATCC 25668 as the host cell. The antiviral activity of date pits was found to mediate by binding to the phage, with minimum inhibitory concentration (MCC) of <10ugml⁻¹. The decimal reduction time (D-values), the concentration exponent and the phage inactivation kinetics were determined. The date pit extracts show a strong ability to inhibit the infectivity of pseudomonas phage ATCC 14209 – BI and completely prevented bacterial lysis, which it is hoped will promote research into its potential as a novel antiviral agent against pathogenic human viruses. (Sabah et al.,2007).

20. FAMILY NAME: PANDANACEAE

BOTANICAL NAME: Pandanus candelabrum P. Beauv.

COMMON NAME: Screw pine

VERNACULAR NAME: Ebo

Plant part used: Leaves.

Folk use: The fresh leaves are used against sore throat.

Preparation of Remedy: No preparation.

Dosage: Fresh leaves are chewed and the liquid content swallowed thrice daily.

LITERATURE

The infusion of the bark is used in curing diarrhea, dysentery and enteritis (Etukudo, 2003).

21. FAMILY NAME: RUTACEAE

BOTANICAL NAME: Citrus aurantifolia (Christm) Swingle.

COMMON NAME: Lime

VERNACULAR NAME: Animo ne giee

Plant part used: Young leaves.

Folk use: Its use for sore throat.

Preparation of remedy:

Young fresh leaves are grinded and the juice from it is mixed with gin and little quantity of alum depending on the content of the squeezed juice.

Dosage: Twice daily.

LITERATURE

The leaves are chewed for bad breath (Gill, 1992). The decoction of the leaves is used for fever, jaundice, headache, eye-wash and gargle (Gill, 1992). The roots are eaten as anthelmintic (Gill, 1992). Leaves, stem, root, fruit are used for fever, jaundice, antimicrobials, abdominal ulcer, gonorrhoea, carminative, hypertensive recipe, flavouring agent, measles, cough, toothache, anthelmintics, scurvy (Odugbemi and Akinsulire, 2006). Graded dose of nature cure bitters (NCB) made from *Citrus aurantifolia* were daily administered (100, 200 and 400mg/kg p.o) to rats for 28days and the effect on body weight, organ weight, clinical signs, gross pathology, haematology, histology and serum biochemical parameters were evaluated. The relative weights of the heart, liver and testes of treated rats were unaffected in contrast to a significant increase in the relative weights of the lungs, kidneys and spleen. The pack cell volume and haemoglobin concentration were significantly reduced whereas total leucocyte counts and glucose levels were remarkably increased (Aniagu et al., 2005).

22. FAMILY NAME: SOLANACEAE

BOTANICAL NAME: *Lycopersicon esculentum* Mill.

COMMON NAME: Tomato

VERNACULAR NAME: Ekhue

Plant part use: Leaves.

Folk use: Leaves are used to treat eyes with blood stain.

Preparation of remedy: Young fresh leaves are squeezed and the juice is dropped into the eyes.

Dosage: One drop, twice daily.

LITERATURE

.Alkaloid, tomatine, lycopene, carotene, ascorbic acid and vitamin (Gill, 1992). A glycoside in which four CHO residues are attached to the 3 – OH group of the aglycone tomatidine, occur naturally in tomato. It also contain glycoalkaloid (Blankemeyer et al., 1997).The mechanism of glycoalkaloids in animal and human cells may be disruption of cell membranes and changes in ions fluxes and interstitial currents of the membrane (Blankemeyer et al., 1997).

23. FAMILY NAME: SOLANACEAE

BOTANICAL NAME: *Nicotiana tabacum* L.

COMMON NAME: Tobacco

VERNACULAR NAME: Itaba

Plant part uses: Leaves.

Folk use: Leaves are used for eye treatment (Irritation).

Preparation of remedy: Leaves are squeezed and juice from it is dropped into the eyes.

Dosage: One drop daily.

LITERATURE

Leaves: Traditionally, the leaves are dried, powdered and used for smoking, chewing dripping and snuffing. The dried powdered leaves are mixed with potash and used for tooth pain. The ointment made by simmering the leaves is used as a remedy for cold, ulcers and painful tumor (Gill, 1992). The powdered leaves are used for curing ringworm and to expel worms (Idu et al., 2005). The powdered leaf mixed with honey is used for anemia, while the infusion of leaves and bulb of garlic is used as a remedy for epilepsy and depression (Adodo, 2004). Leaves contain

Alkaloid – normcotine (Gill, 1992); saponin, tannin, nicotine and inulin (Gill, 1992; Adodo, 2004). The leaf juice contains anabasine (Henry, 1949). It has a potential use as a nervine depressant and as anti-convulsant from high coumarine content. Nicotin from leaves in pure form and in high dosage has been described as an active poison, but its pharmacology is different in low dosage when taken orally. (Sofowora, 1993). The juice from the leaf has been reported to have insecticidal activity (Henry, 1949).

24. FAMILY NAME: STERCULIACEAE

BOTANICAL NAME: *Cola nitida* (Vent) Schoet and End.

COMMON NAME: Kola

VERNACULAR NAME: Evbee

Plant part used: Leaves

Folk use: Use leaves for eye trouble such as night blindness.

Preparation of Remedy: Leaves are heated and the juice squeezed from it is dropped into the eyes.

Dosage: The juice is dropped into the eyes, one drop twice daily.

LITERATURE

Leaves: fresh leaves are squeezed in water and taken from insomnia (Adodo, 2004). The leaves are used to prevent boils and used as a stimulant (Idu and Onyibe, 2007). Stem bark: The decoction of the stem bark is used as an appetizer and as a stimulant. The pulp of the bark is taken during female confinement (Gill, 1992). Stem bark, seed and kernel are used for diarrhea, eye trouble as cardiac tonic and as diuretic (Odugbemi and Akinsulire, 2006). The stem bark, seeds and kernels have been found to contain alkaloid caffeine, kolatein, kolatein, starch, lipids, lipase and oxydare enzyme (Gill, 1992). The methanol extract of root bark for *C. nitida* was found to be potent against both *Mycobacterium bovis* and strains of *Mycobacterium vaccae* (Adeniyi et al., 2004).

Conclusions

Health and diseases are measures of effectiveness with which human groups combining and biological resources adapt to their environment. Every culture irrespective of its simplicity and complexity has its own beliefs and practices concerning diseases. The culture of a community determines its health culture. Health problems and practices of any community are profoundly influenced by interplay of complex social, economic and political factors. Due to the belief in supernatural element and religion in matters concerning health, the tribal are almost invariably found to repose faith in diviners or traditional medicine men, sorcerers and shamans. However, tribes are not averse in accepting western medicine, whenever available (Rao et al., 2006). Presently, it is imperative for developing nations such as Nigeria to systematically document uses of medicinal plant in all autonomous areas or communities which are still largely unexplored. This is because of the frailties of the old folks who are usually custodians of such information and also the fast disappearance of traditional cultures and natural resources arising from urbanization and industrialization of these areas, such information could be lost forever (Igoli et al., 2003).

In Benin, ethnomedicinal knowledge from herbalist is passed from one generation to the next through words of mouth while there is common knowledge which is shared by most indigenes especially the old folks. Quite a large number still depend on traditional medicine. The present study revealed that a total of twenty-four (24) plants distributed in eighteen (18) families and twenty-two (22) genera were of popular ethno medicinal relevance. These species were found to cover various different therapeutic applications in the treatment of eye, ear, nose and throat.

The largest number of remedies was used to treat eye problem followed by ear problem. Of all the plants part used, the leaves were the most frequently used, followed by the root, stem, flowers, bulb and seed. The administration of remedies is either internal or external in the form of juice, decoction and infusion or as paste. Some of the remedies were based on a single plant source while others were in combination with other substances and plant species. Some remedies were prepared using ingredients such as salt, alligator pepper and alcohol.

From the study it was observed that more than one part of the plant species was used for different ailments examples include leaves of *S. acuta* which is used for nasal bleeding while the stem was for eye pain. It was also observed that in some of the plant species, one part could be used for more than one ailment, such plants include the bulb of *A. cepa* which is used to treat eye and ear ailment, stem of *E. hirta* for the treatment of both eye and ear, leaves of *S. monbin* for treating both short-sightedness and cataract and the leaves of *N. laevis* for the treatment of both eye and ear ailment.

Furthermore, the study also revealed that more than one plant species can be used for treating the same ailment. Plants such as *A. conyzoides* and *N. laevis* are used for treating redness of the eye and inflammation. *A. cepa* and *R. vomitoria* are used for treating irritation of the eye, *O. gratissimum*, *S. acuta* and *G. hirsutum* are used for treating nasal bleeding. *C. nucifera* and *P. candelabrum* are used for treating sore throat. *C. jagus* and *O. basilicum* is used for treating irritation of the eye, *C. jagus* and *O. basilicum* is used for treating ear ache. Although these plants have the same usage, each plant has different methods of preparation using different recipes and different dosage.

Finally, this study therefore, on 24 medicinal plants used by the binis for the treatment of eye, ear, nose and throat can possibly be used as a potential source for making herbal medicines against some diseases and can be treated as a document for preserving the ethnomedicinal knowledge for posterity.

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Table 1. Species distribution and their indigenous uses.

FAMILIES	NO. OF SPECIES	AILMENTS
Asteraceae	2	Redness of the eye and inflammation, sore throat
Liliaceae	1	Irritation of the eye, ear ache, dull coloration of the eyes
Euphorbiaceae	1	Conjunctivitis and ear ache
Anacardiaceae	1	Short sightedness and cataract
Bignoniaceae	1	Redness of the eye and inflammation, sore eye and ear pain
Apocynaceae	1	Irritation of the eye
Labiatae	2	Ear ache and nasal bleeding
Moraceae	1	Conjunctivis
Malvaceae	2	Nasal bleeding and eye pain
Palmae	2	Sore throat
Pandanaceae	1	Sore throat
Solanaceae	2	Blood stained eyes
Amaryllidaceae	1	Ear ache
Rutaceae	1	Sore throat
Fabaceae	1	Night-blindness
Papilionaceae	1	Eye sore
Capparadaceae	1	Ear ache
Sterculiaceae	1	Night-blindness
Caricaceae	1	Fat deposit in the eyelid